

COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF INTERNAL AFFAIRS
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COAL RESERVES IN ARMSTRONG COUNTY, PENNSYLVANIA

By

John F. Reese

Introduction.

In connection with the "Introduction to the Bituminous Coal Fields of Pennsylvania" now being prepared for publication by the Pennsylvania Geological Survey, coal reserves of the bituminous fields are being computed by Mr. John F. Reese. In order to render this information available at once without waiting for the uncertain date of printing the report, an abstract of Mr. Reese's figures for Armstrong County is given herewith. All of the information readily available at this time has been used in the computation, which followed the methods used by the Land Classification Board of the United States Geological Survey in its valuation of the public coal lands. The results are given by beds for each township. For some beds and for some areas the data are abundant and the results entirely reliable. For other beds and areas the data are meager and the results subject to revision as additional data are obtained. All the data used and the computation sheets are permanently filed so that modifications of the original figures can be made readily when required by additional information.

The figures presented are preliminary and subject to correction for any area when that area shall be studied in detail. In the meantime critical examination of the figures is invited in order that the results may be made as accurate as possible. To that end the Survey will welcome every bit of information not now in its possession. Records of drillings and other data will be kept strictly confidential if so desired, although the Bureau naturally prefers to be able to use data freely.

George H. Ashley.

COAL BEDS.

Armstrong County has six coal beds that are now of economic interest. In order of present importance as shipping coals they are the Upper Freeport, Lower Kittanning, Upper Kittanning, Lower Freeport, Pittsburgh, and Brookville.

Upper Freeport coal. The extensive development and outcrop of this bed throughout the county have furnished many measurements of its thickness, making possible an accurate estimate of quantity.

The percentage of this bed that can be recovered is governed by the sequence in which the Upper and Lower Freeport coals are mined. If the Lower Freeport bed is worked first and pillars are drawn, the overlying rocks will cave and break the Upper Freeport bed, thereby causing a partial and in many places complete loss of that coal.

The Upper Freeport bed contains the second greatest reserve within the county, and is the largest producer, yielding more than 3,500,000 tons annually.

Lower Kittanning coal. Throughout the townships in the northern half of the county where this coal outcrops a fair amount of information as to its thickness and persistency is available. For the townships in the southern half, data are meager, and a general average based on thicknesses in surrounding areas was adopted, and a low percentage of recovery allowed because the extent and thickness of this bed are not known.

This bed contains the greatest coal reserve within the county, and ranks second in production with a total of over 1,500,000 tons annually.

Upper Kittanning coal. Little information as to the extent and thickness of this bed is available, except from its recognized outcrop and development in a few localities. This bed is extremely variable as to section and thickness, attaining great height in local troughs or channels 200 to 300 yards in width, and thinning to 12 inches or less at trough limits. It is known as the "Pot Vein" because of this peculiarity. The Upper Kittanning bed in these troughs is a cannel coal, with 24 inches and less of bituminous coal under the cannel. Where available measurements show sufficient thickness for mining, the writer assumed the presence of small workable areas contiguous to the place of measurement. The quantity of coal was computed from the average thickness of the bed in that vicinity. A low percentage of recovery has been adopted, owing to the extreme variability of this bed, and lack of knowledge as to its persistency and extent.

The Upper Kittanning coal as computed in this report is fifth in size of reserve in the county, and ranks third in production with a total of over 300,000 tons annually.

Lower Freeport coal. A fair number of measurements of the thickness of this coal are available from its outcrop and development, making possible a fairly accurate computation of quantity.

Little is known as to the extent and thickness over large areas, and a general average based on thicknesses in surrounding areas was used.

A low percentage of recovery was adopted for this reason, and because of the general "faulty" condition of the bed where it is mined.

The Lower Freeport coal is third in size of reserve within the county, and ranks fourth in production with a total of over 200,000 tons annually.

Pittsburgh coal. The extensive development and outcrop of this bed furnish a fair number of measurements of its thickness, thus making possible a reliable computation of quantity.

Owing to lack of knowledge of the extent and persistency of coals not mentioned herein, the Pittsburgh bed can be considered as sixth in size of reserve within the county, and fifth in production, with a total of over 120,000 tons annually.

Brookville coal. This bed has been computed as of economic importance in eight townships, all in the Mahoning basin. Little information as to extent and persistency of this coal is available, therefore the computations for these townships are based on general average thicknesses to accord with measurements in adjoining areas. A low percentage of recovery has been adopted for this reason.

The best available information indicates that this bed is fourth in size of reserve within the county, and ranks sixth in production with a total of over 8,500 tons annually.

Method of Computing Reserves.

A base map for each coal bed was made by tracing its outcrop from the quadrangle maps made by the U. S. Geological Survey. All available measurements of a coal bed, gathered from Federal and State reports, mine maps, core drill records and personal inspections, were plotted on the map of that coal bed at the locality represented. By studying the distribution of the figures, areas of equal thickness were plotted, and by means of a planimeter, an instrument for measuring plane areas, the area of each coal bed in each township was measured. The unit used for calculating the quantity of coal was 90,000 short tons per inch of bed per square mile of area.

Worked-out areas were determined from mine maps and plotted to scale on the base maps. The same method as above was used for computing the quantity of coal extracted.

For some localities, no information is available as to the mined out areas of the various beds computed herein. For these places, an estimate of probable depletion has been made, based on age and size of operation, or on the difference between original areas and statements of acreages remaining unmined.

Having calculated the quantity of coal originally contained within the area of any bed and subtracted the quantity already mined out, the writer determined from engineering experience the probable percentage of each bed which could be recovered in different localities. This varies from 60 to 90 per cent, depending on the thickness and character of the bed. The quantity of coal computed to be in any bed, multiplied by the assumed percentage of recovery, less 15 per cent for loss in mining, gives the estimated recoverable tonnage.

Coal Reserves.

The area of Armstrong County is 682.2 square miles.

The result of computing the coal reserves in Armstrong County based on the latest maps, engineering data, and methods is shown in the accompanying tables.

One table gives the estimated recoverable tonnage by beds and townships. The figures have been given as computed. It should however be distinctly understood that while the acreage of each of the beds has been accurately computed, the reliability of the average thickness of the coals used in the computation of tonnage decreases for the beds in the order following: Pittsburgh, Upper Freeport, Lower Kittanning, Lower Freeport, Upper Kittanning, and Brookville. Thus, while the figures for the Pittsburgh bed are conservative and probably reliable, the figures for the Brookville coal may be much too small or many times too large.

Coal Reserves in Armstrong County in Short Tons.

Bed	Original Deposit	Mined out	Recoverable
Pittsburgh	17,500,000	13,900,000	2,800,000
U. Freeport	1,288,300,000	60,350,000	943,000,000
L. Freeport	607,000,000	5,000,000	387,100,000
U. Kittanning	131,500,000	4,500,000	69,900,000
L. Kittanning	1,541,200,000	23,510,000	1,001,000,000
Brookville	165,200,000	30,000	87,300,000
Total	3,750,700,000	107,290,000	2,491,100,000

Summary of Recoverable Coal in Armstrong County - in short tons

Township	Pgh.	U. Freeport	L. Freeport	U. Kittanning	L. Kittanning	Brockville	Total
Bethel	-----	34,400,000	13,000,000	-----	34,300,000	-----	81,700,000
Boggs	-----	26,400,000	19,600,000	1,800,000	51,300,000	18,000,000	117,100,000
Bradys Bend	-----	12,800,000	-----	3,600,000	20,700,000	-----	37,100,000
Burrell	-----	33,100,000	-----	-----	39,900,000	-----	73,000,000
Covanshammock	-----	125,400,000	77,700,000	15,300,000	104,600,000	9,900,000	332,900,000
E. Franklin	-----	34,100,000	35,300,000	2,600,000	59,800,000	-----	131,800,000
Gilpin	-----	25,400,000	1,800,000	5,300,000	37,600,000	-----	70,100,000
Hovey	-----	-----	-----	-----	-----	1,000,000	1,000,000
Kiskimintas	1,100,000	106,200,000	-----	7,000,000	17,900,000	-----	132,200,000
Kittanning	-----	65,800,000	16,500,000	2,000,000	60,900,000	-----	145,200,000
Madison	-----	-----	-----	-----	18,000,000	3,800,000	22,700,000
Mahoning	-----	18,400,000	10,400,000	1,500,000	12,600,000	12,400,000	55,300,000
Menor	-----	30,700,000	18,200,000	-----	39,200,000	-----	88,100,000
N. Buffalo	-----	37,100,000	20,700,000	4,400,000	60,900,000	-----	123,100,000
Parks	-----	30,400,000	-----	-----	22,500,000	-----	52,900,000
Perry	-----	15,100,000	-----	-----	18,700,000	-----	33,800,000
Pine	-----	2,900,000	2,900,000	-----	4,400,000	3,000,000	13,200,000
Plum Creek	-----	101,800,000	82,000,000	900,000	71,500,000	-----	256,200,000
Rayburn	-----	13,600,000	10,400,000	-----	16,200,000	-----	40,200,000
Redbank	-----	8,500,000	7,400,000	1,300,000	31,000,000	5,200,000	53,400,000
South Bend	1,700,000	52,000,000	16,500,000	-----	9,100,000	-----	79,300,000
S. Buffalo	-----	47,200,000	1,000,000	-----	58,300,000	-----	106,500,000
Sugar Creek	-----	39,500,000	-----	3,200,000	66,000,000	-----	108,700,000
Valley	-----	18,700,000	13,700,000	2,300,000	17,200,000	-----	51,900,000
Washington	-----	4,100,000	3,100,000	4,600,000	34,100,000	-----	45,900,000
Wayne	-----	48,800,000	25,600,000	12,800,000	64,600,000	34,000,000	185,800,000
W. Franklin	-----	9,700,000	11,300,000	1,300,000	29,700,000	-----	52,000,000

Total	2,800,000	943,000,000	387,100,000	69,900,000	1,001,000,000	87,300,000	2,491,100,000
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